

# REASON

- **To be able to teach, instruct, and assist crews using TWGSS, the instructor must have an in depth knowledge of the operation, function, and capabilities of TWGSS and its components.**

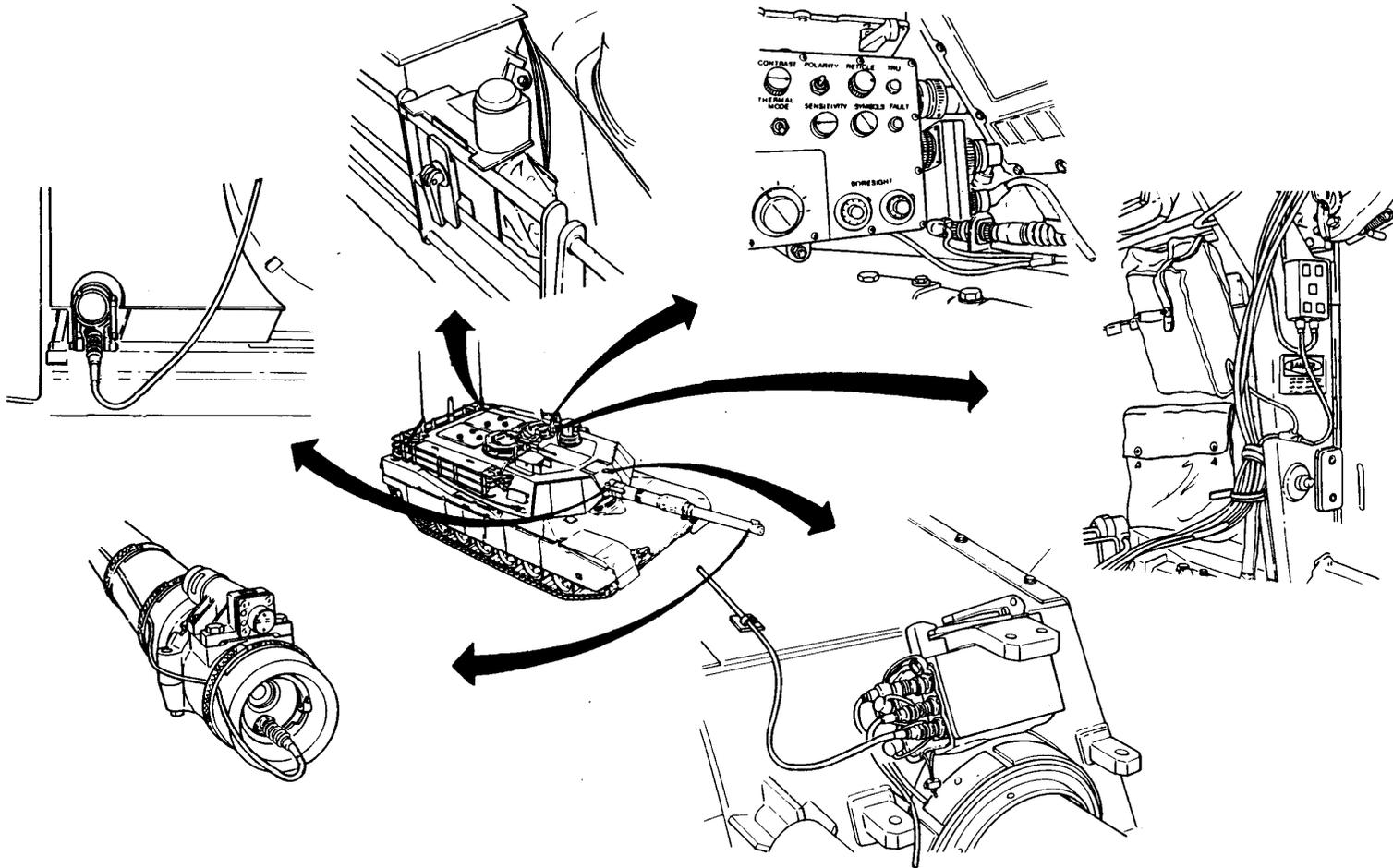
# **TRAINING OBJECTIVE**

- **In a classroom environment, given a student handout, TM 9-6920-709-12&P-1-2, and TM 9-6920-711-12&P-1, you will become familiar with the function and capability of TWGSS and its components.**

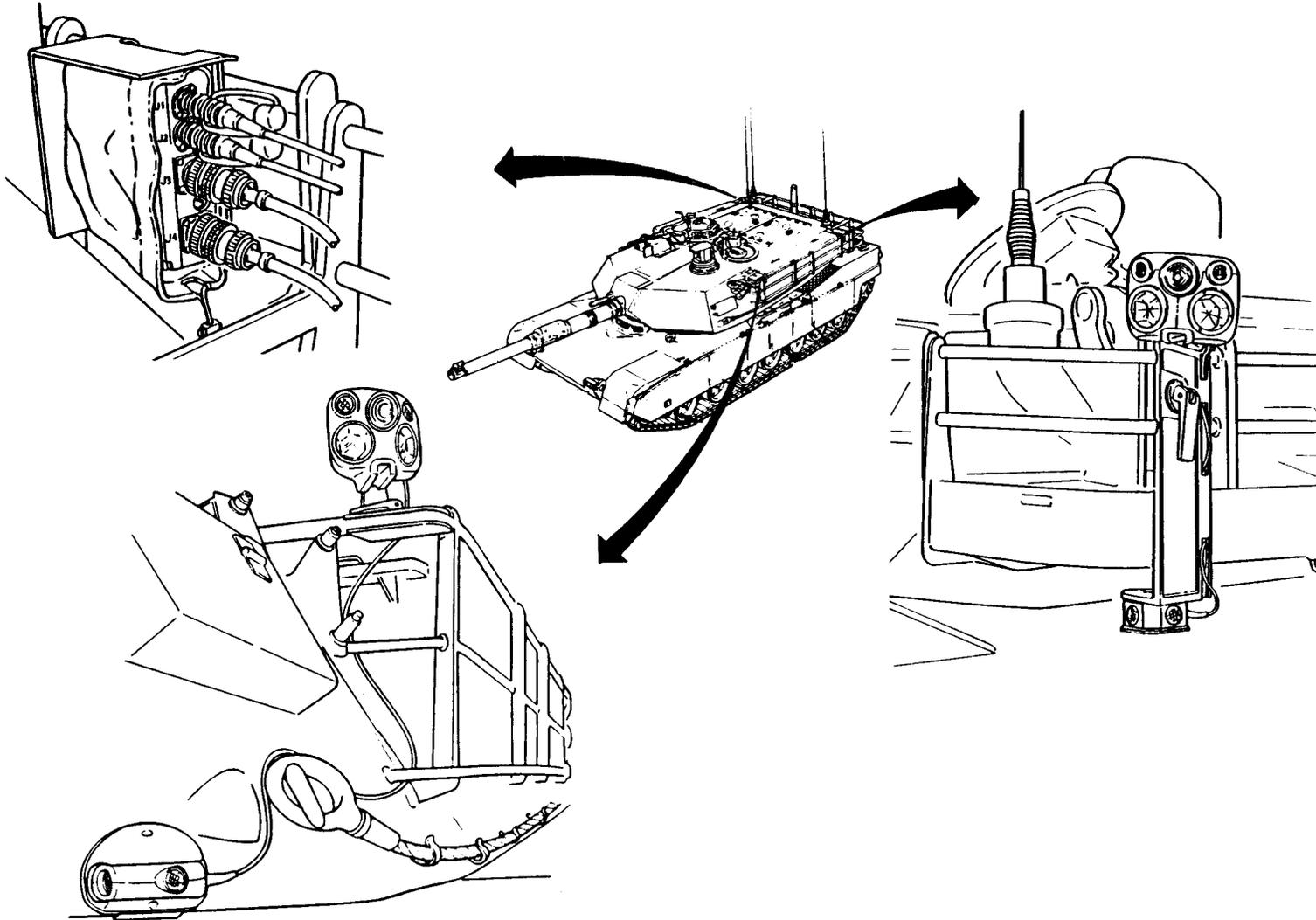
# TWGSS SUB-SYSTEMS

- **Firing system**
  - **Transceiver unit**
  - **Tracer, burst, obscuration simulator (TBOS) system**
- **Target system**
  - **Target computer unit**
  - **Retro detector and hull defilade detector units**
- **Training Data Retrieval System (TDRS)**
  - **TDRS computer unit**
  - **TDRS memory card**

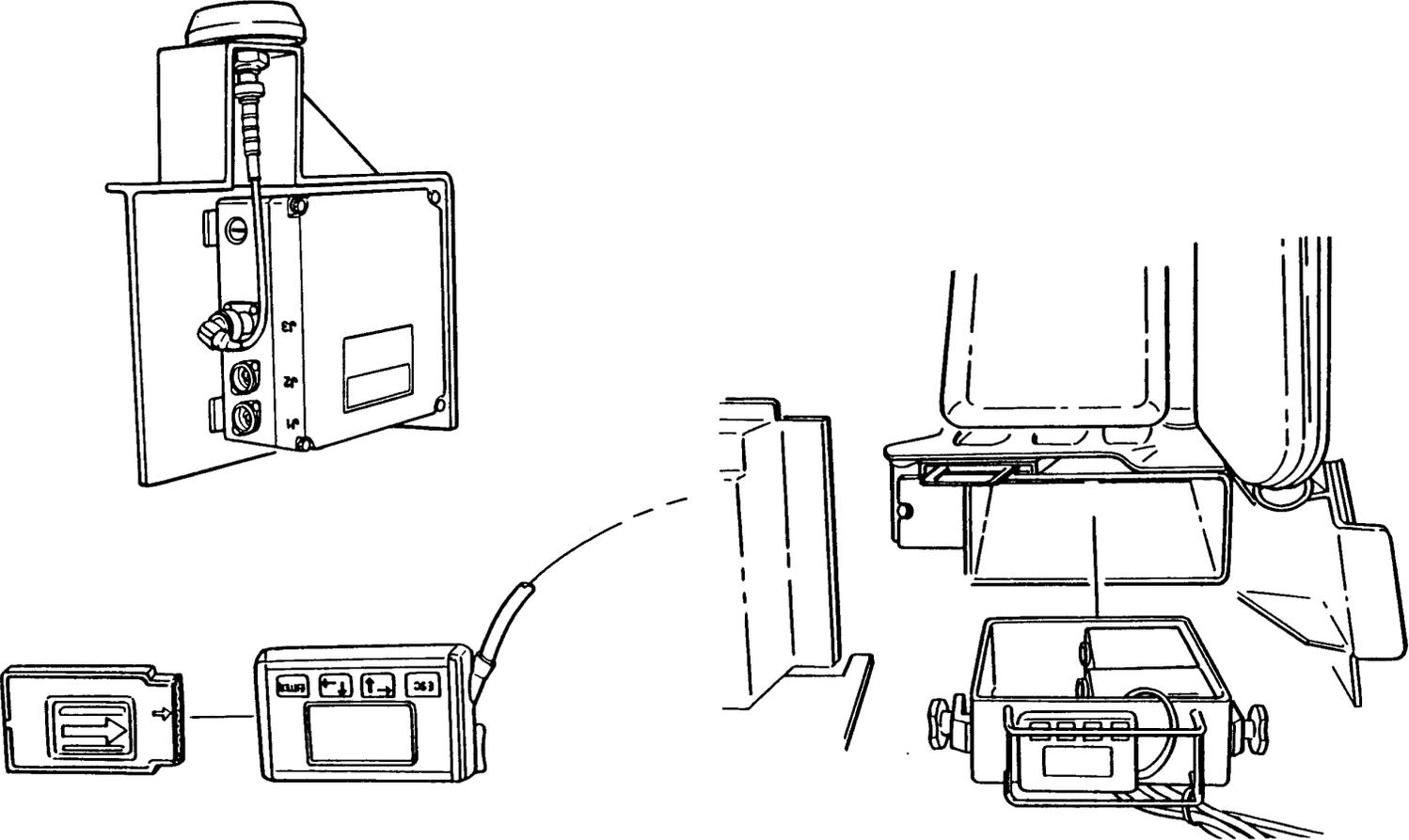
# FIRING SYSTEM



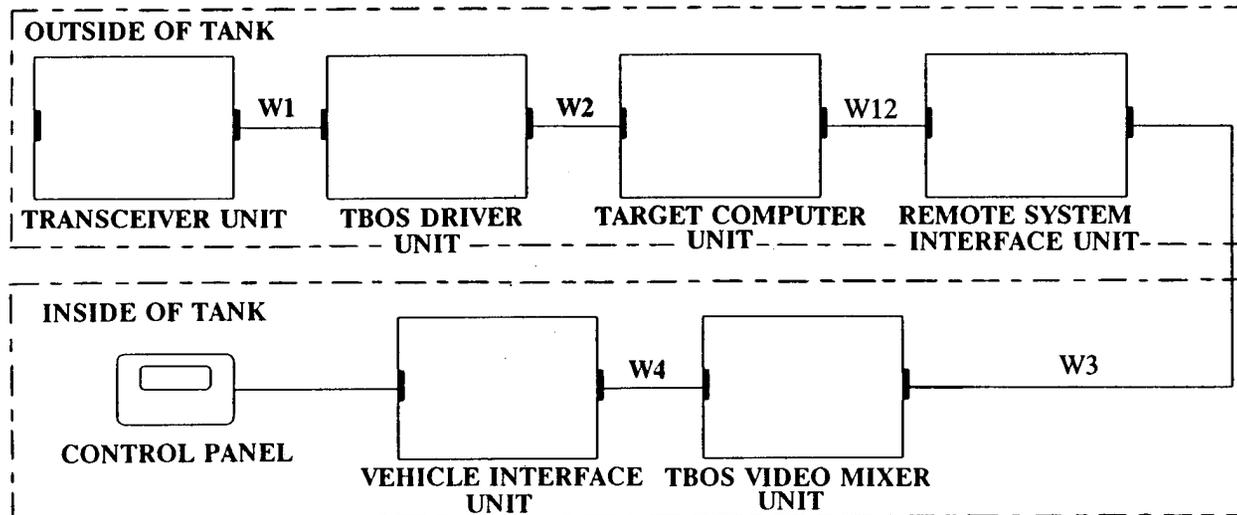
# TARGET SYSTEM



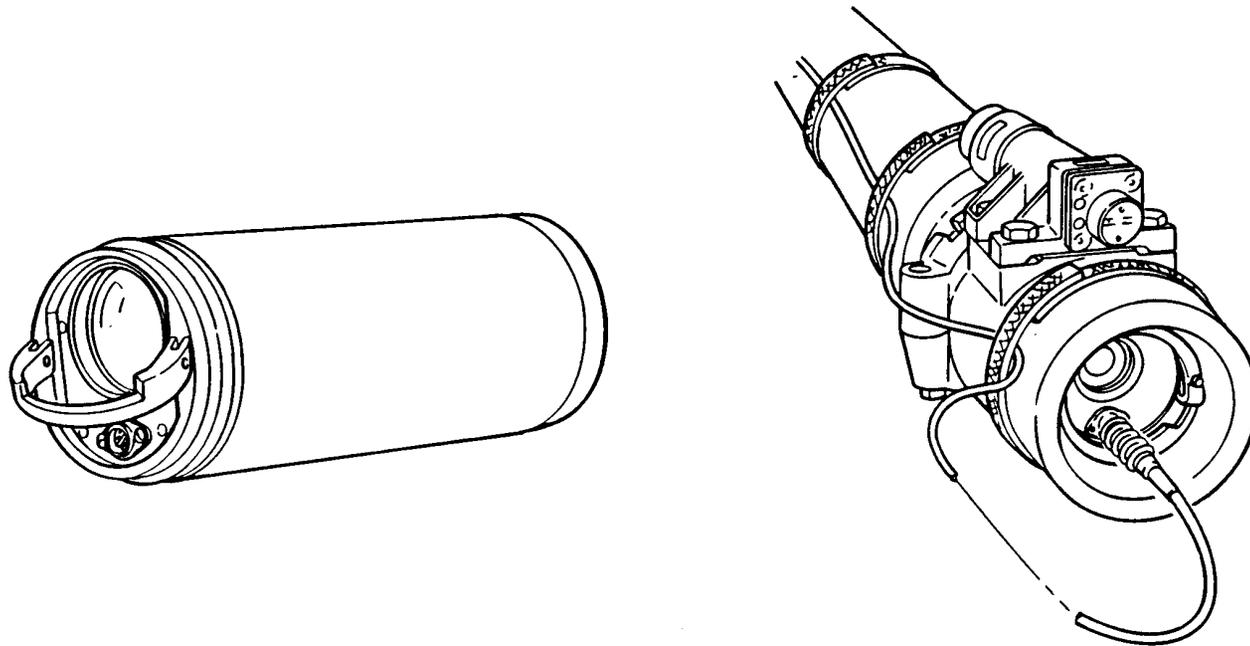
# COMMON COMPONENTS



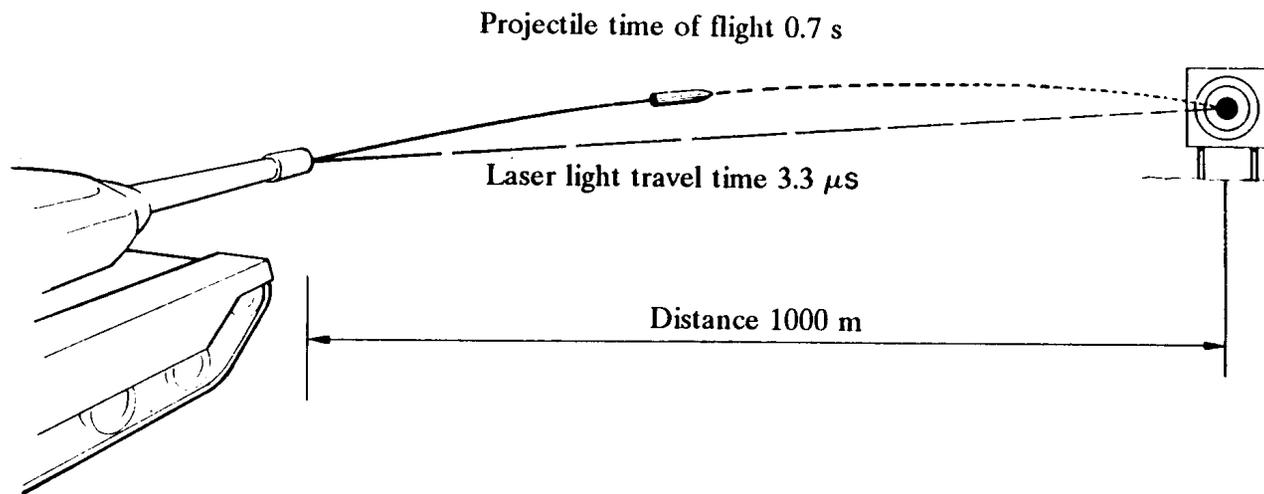
# TWGSS SYSTEM DESIGN



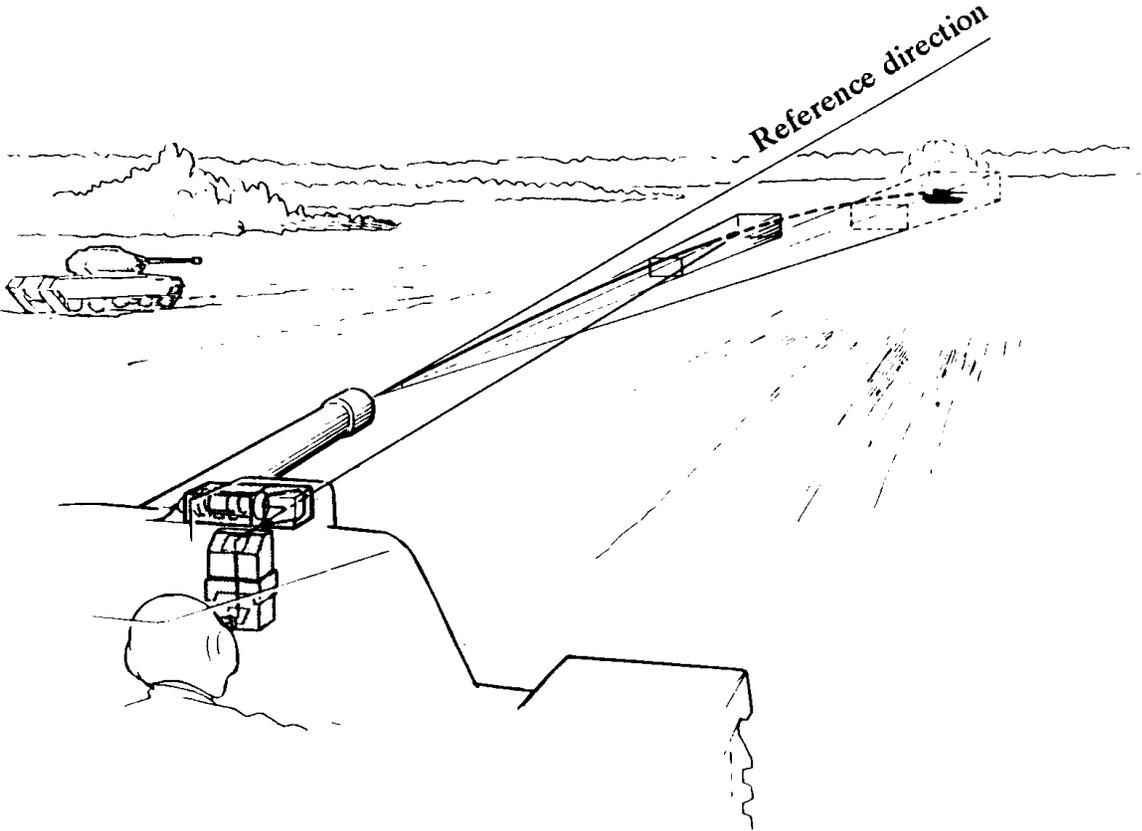
# TRANSCEIVER UNIT



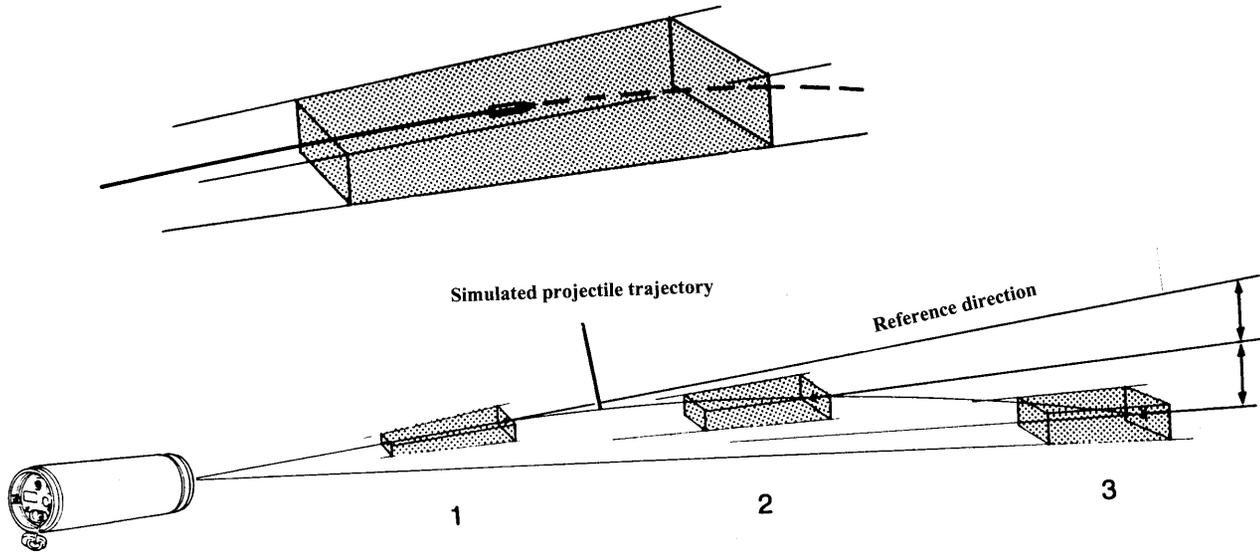
# SIMULATION WITH LASER LIGHT



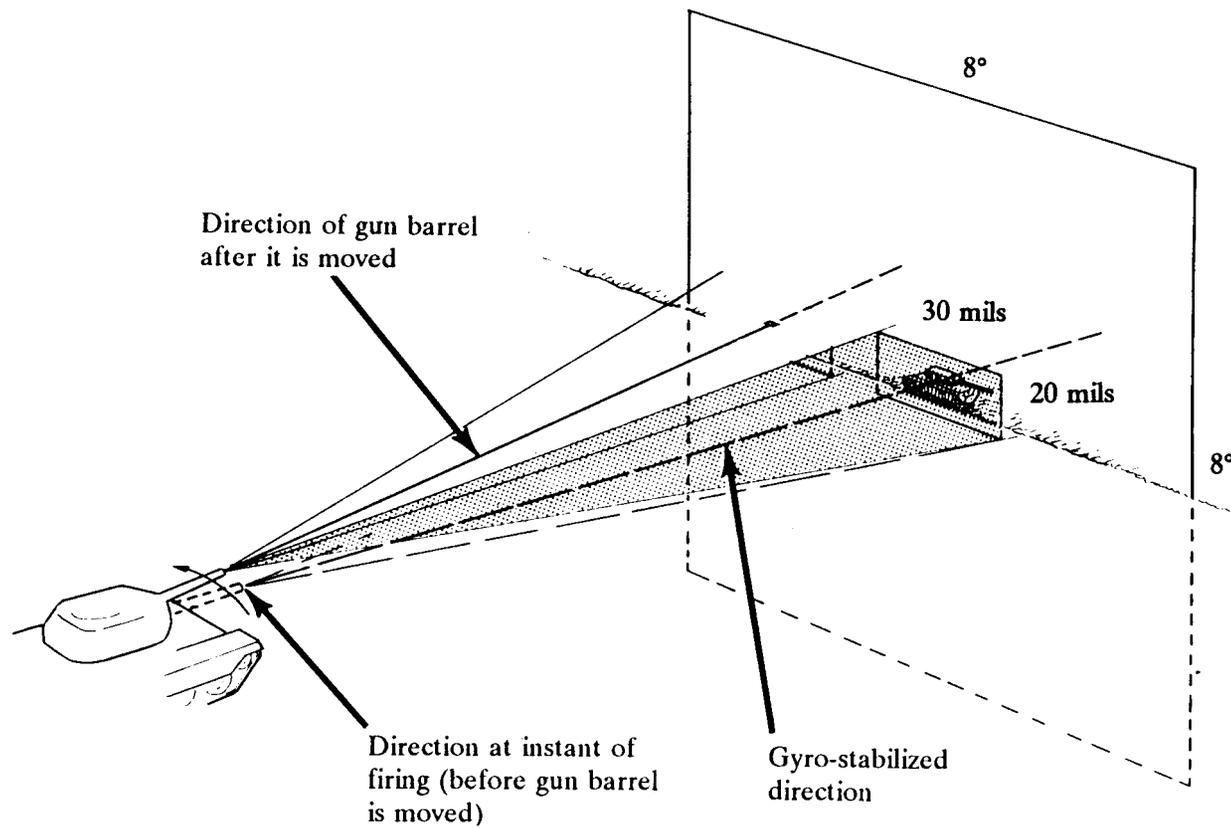
# FLYING VOLUME



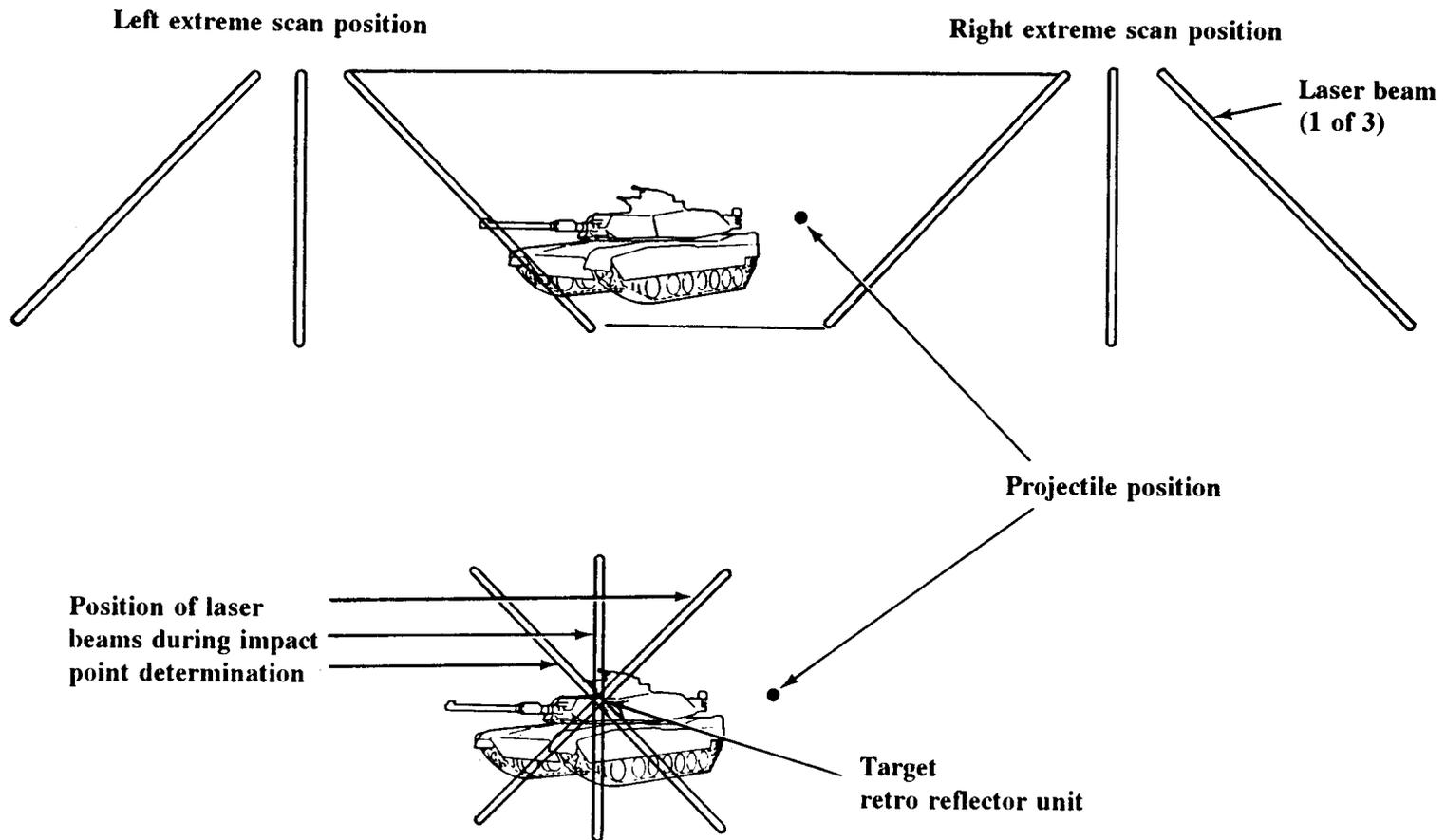
# FLYING VOLUME



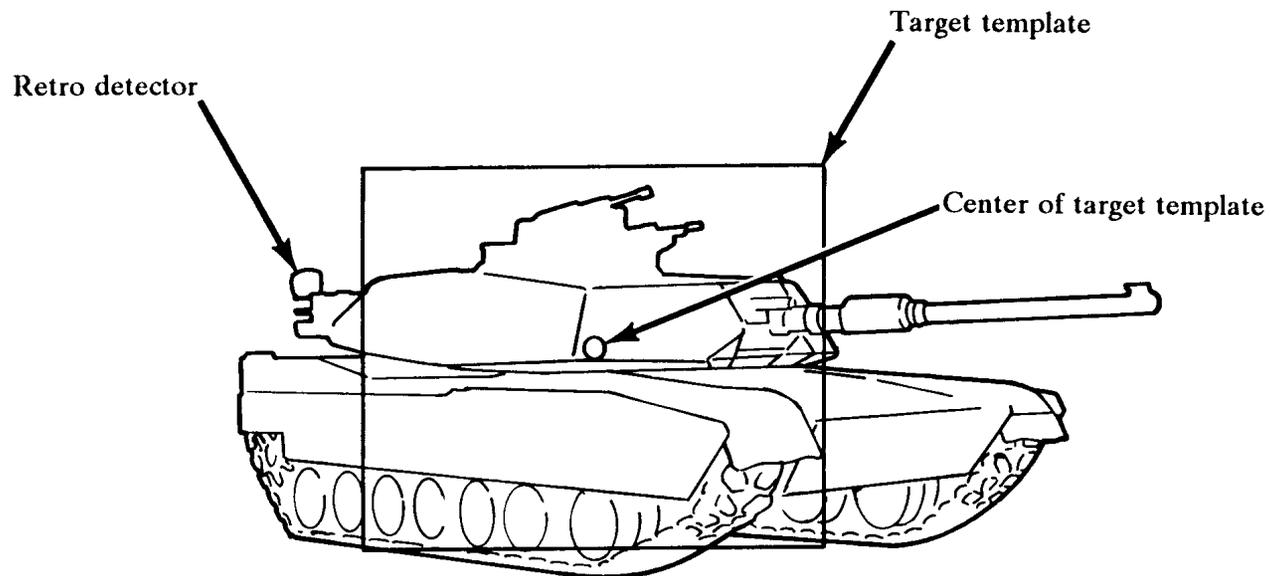
# GYRO STABILIZATION



# IMPACT POINT DETERMINATION



# ENGAGEMENT RESULTS



# **BALLISTIC SIMULATION**

- **Trajectory, velocity, and time of flight**
- **Ammunition and air temperature**
- **Barometric pressure**
- **Subdes and CCFs**
- **Ammunition dispersion selectable**

# COMPUTER CORRECTION FACTORS

	<b>SUBDES</b>	<b>AZ</b>	<b>EL</b>
• <b>HEAT</b>	<b>M830</b>	<b>-0.25L</b>	<b>+0.37D</b>
• <b>SABOT</b>	<b>M829A1</b>	<b>0.0</b>	<b>-0.45U</b>

# **INFORMATION TRANSMITTED**

- **Hit position**
- **Ammunition type fired**
- **Player identification**
- **MILES**

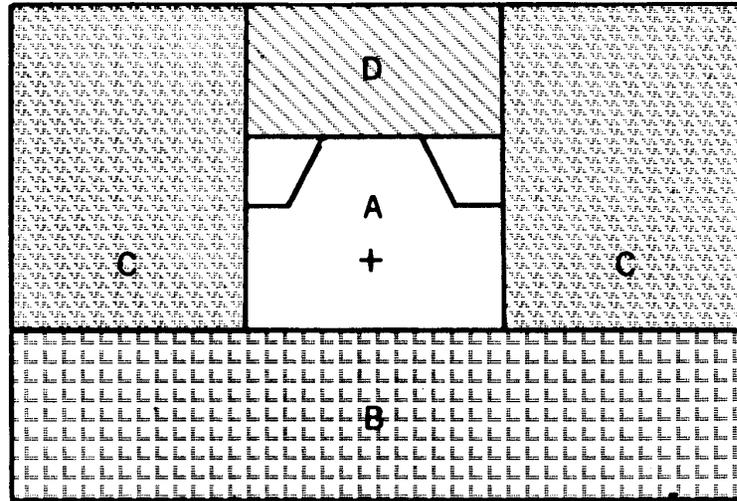
# **TRANSCEIVER UNIT IN GUN BARREL**

- **Protection**
- **Positioned where projectile leaves gun muzzle**
- **Misalignment of sight/gun**
- **Gun tube bending (MRS update)**
- **Mechanical play sight/gun**

# TBOS EFFECTS

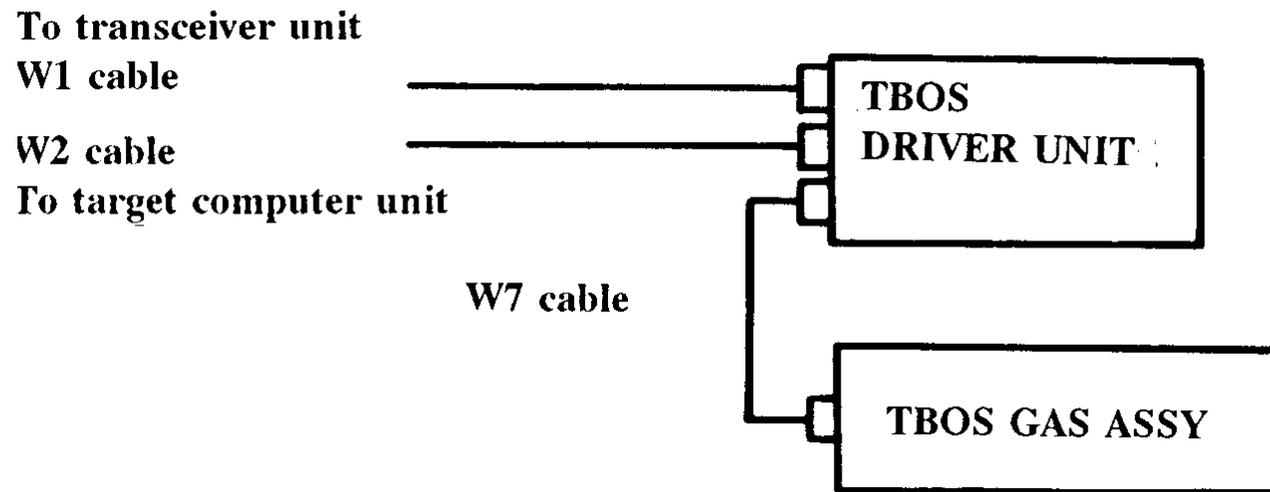
- **Tracer**
  - **Zoomed**
  - **Switchable on/off**
- **Burst**
  - **Size is ammunition dependent**
  - **Size is range dependent**
  - **Switchable on/off**
- **Obscuration**
  - **Programmable, 0-5 sec**

# TBOS SIMULATION

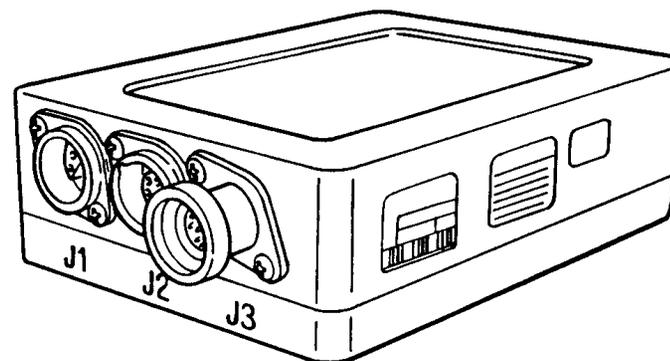


- A: Tracer simulation is stopped. Burst indication is given.**
- B: Tracer simulation is stopped at ground plane and ground burst impact is indicated.**
- C: Simulation continues until projectile reaches maximum simulated range or hits ground.**
- D: Simulation continues until projectile reaches maximum range or projectile reaches upper edge of target template.**

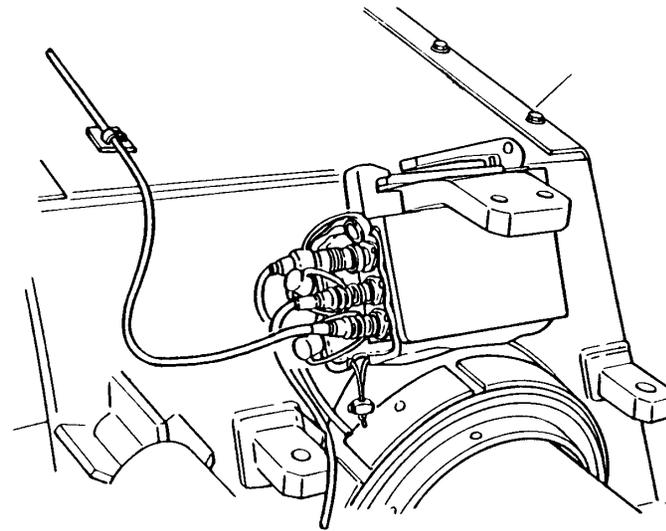
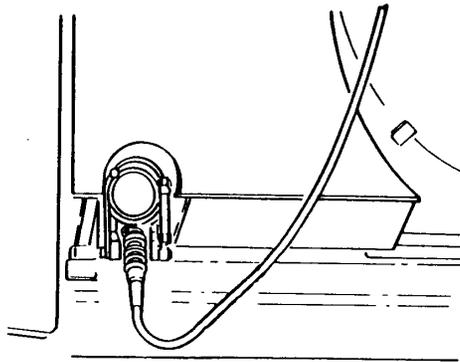
# TBOS GAS SYSTEM DESIGN



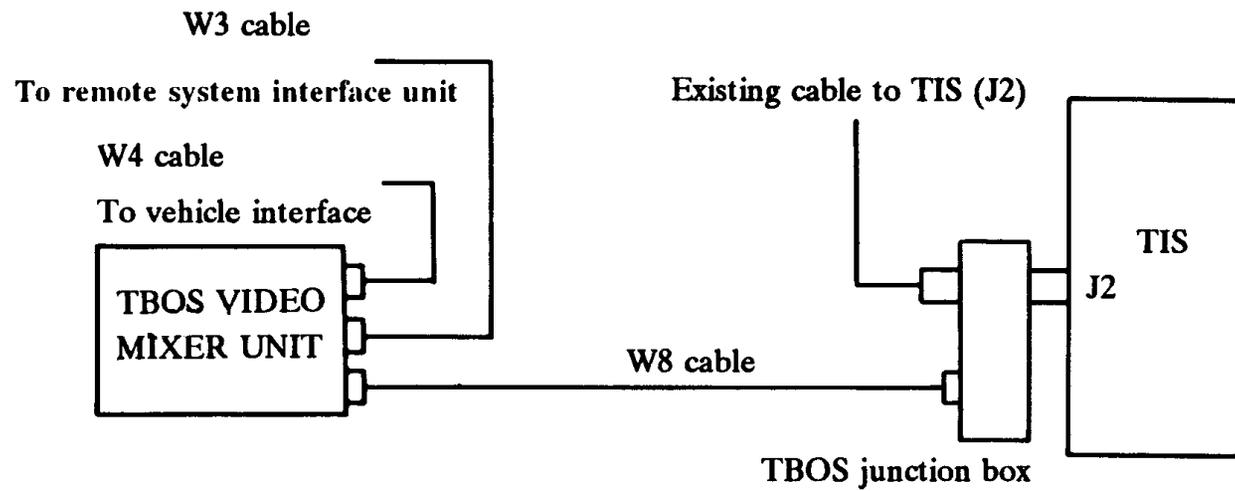
# TBOS GAS COMPONENTS



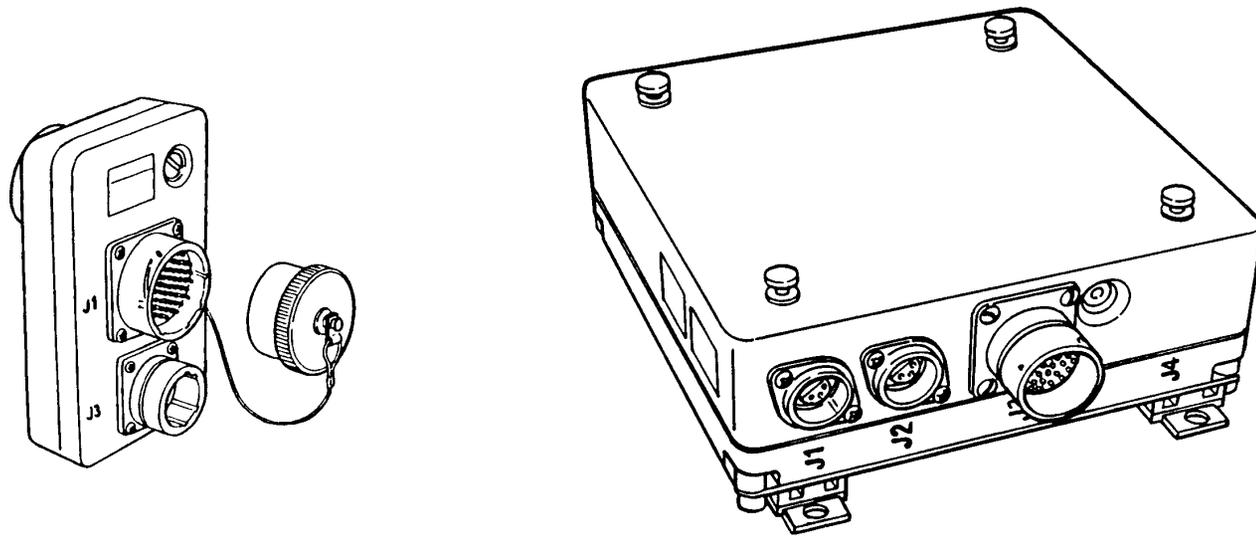
# INSTALLATION OF TBOS GAS COMPONENTS



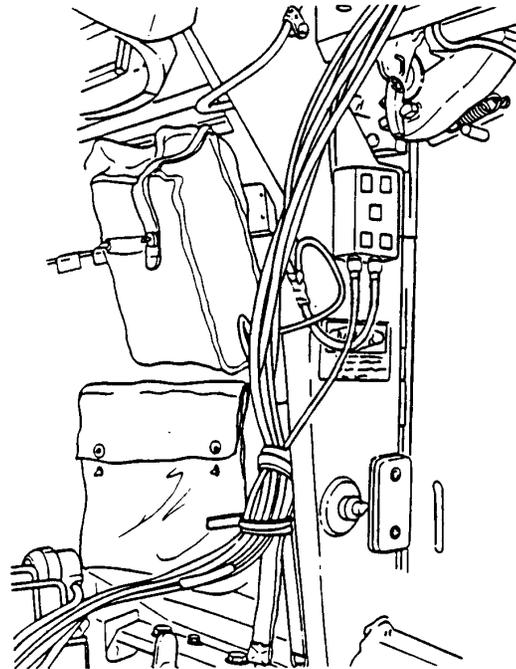
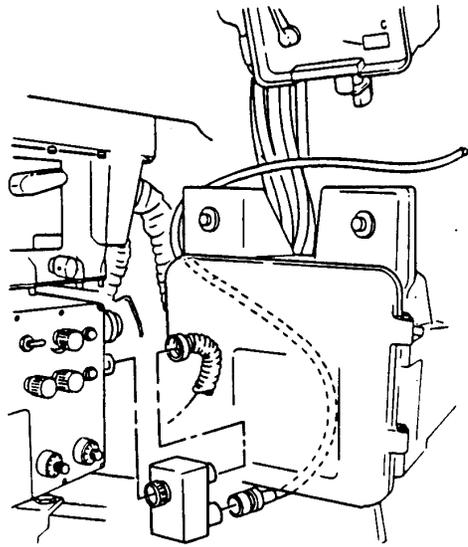
# TBOS GPS SYSTEM DESIGN



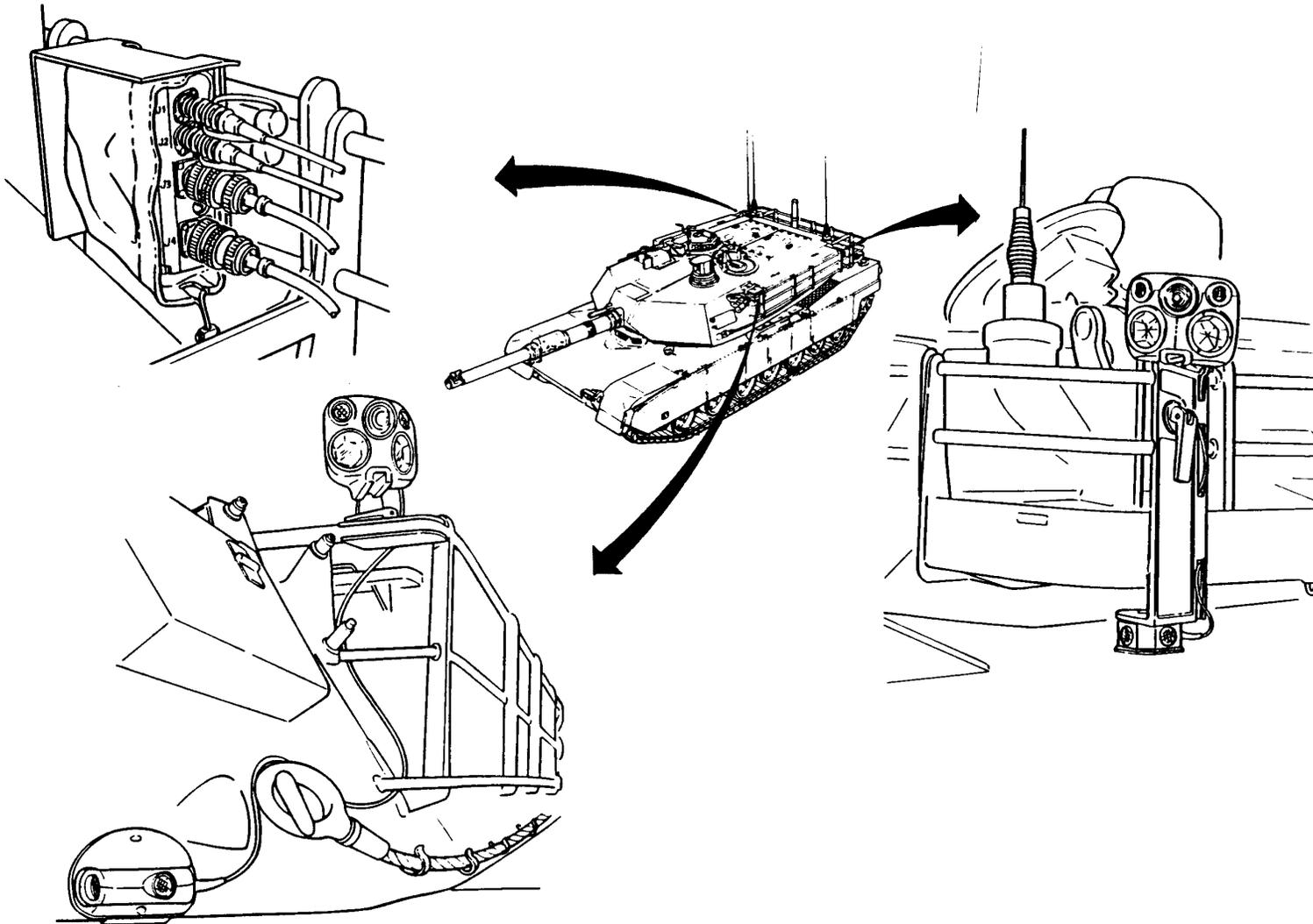
# TBOS GPS COMPONENTS



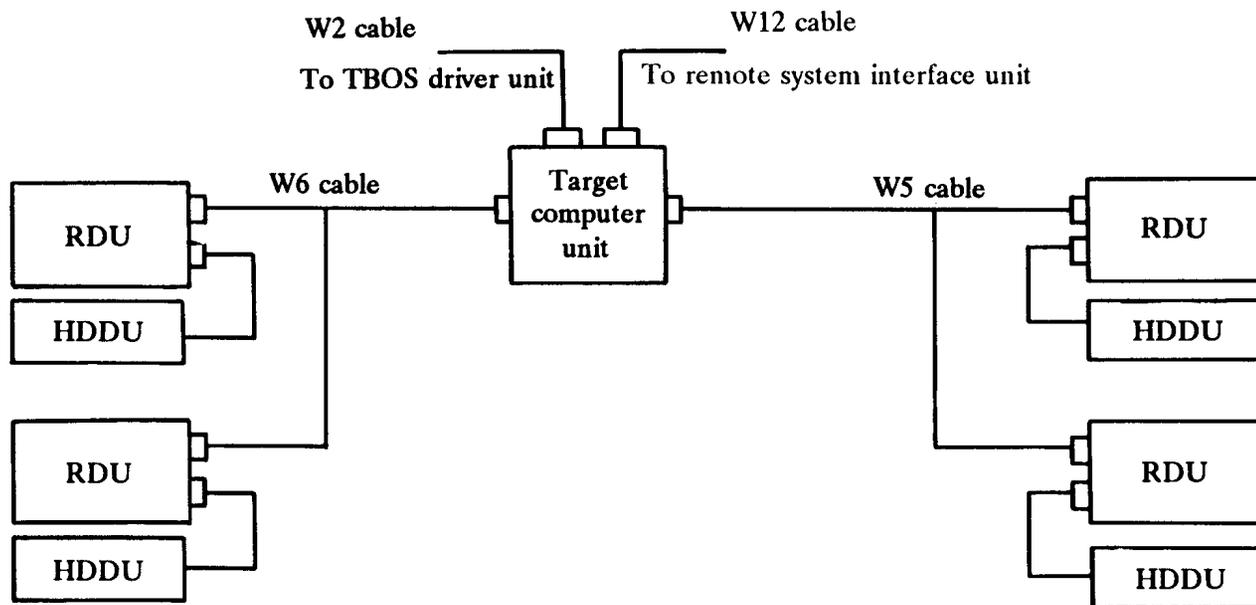
# INSTALLATION OF TBOS GPS COMPONENTS



# TARGET SYSTEM



# SYSTEM DESIGN OF TARGET SYSTEM



# TARGET SYSTEM MAIN FUNCTIONS

- **Receive information (coded laser light)**
- **Determine angle of attack**
- **Determine MISS/HIT**
- **Determine MOBILITY or WEAPON KILL**
- **Determine catastrophic KILL**
- **Indicate the effect**

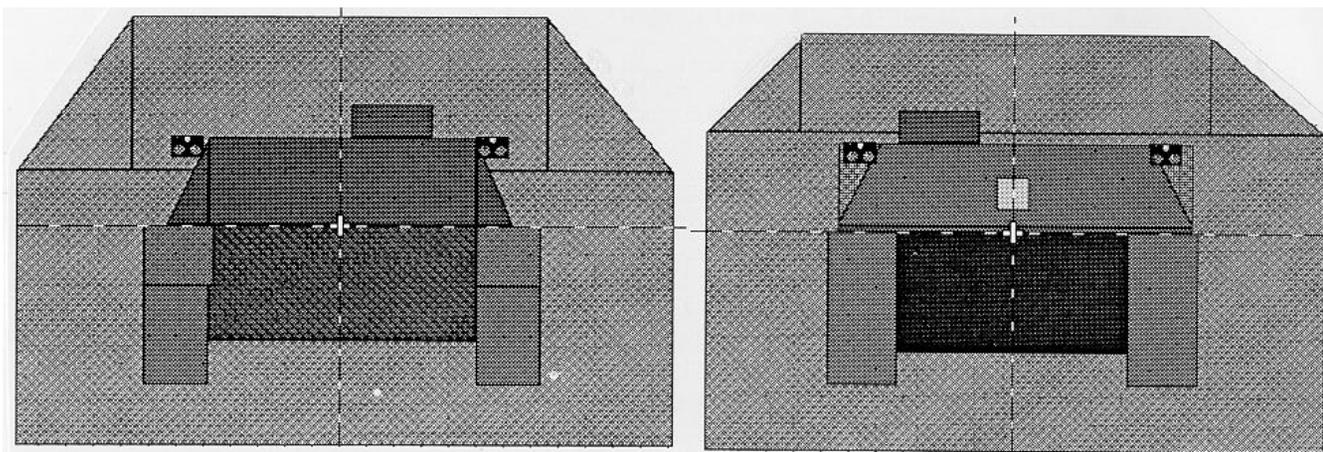
# **INFORMATION RECEPTION**

- **Hit coordinates**
- **Type of ammunition fired**
- **Identity of attacker**
- **MILES information**
- **CGUN information**

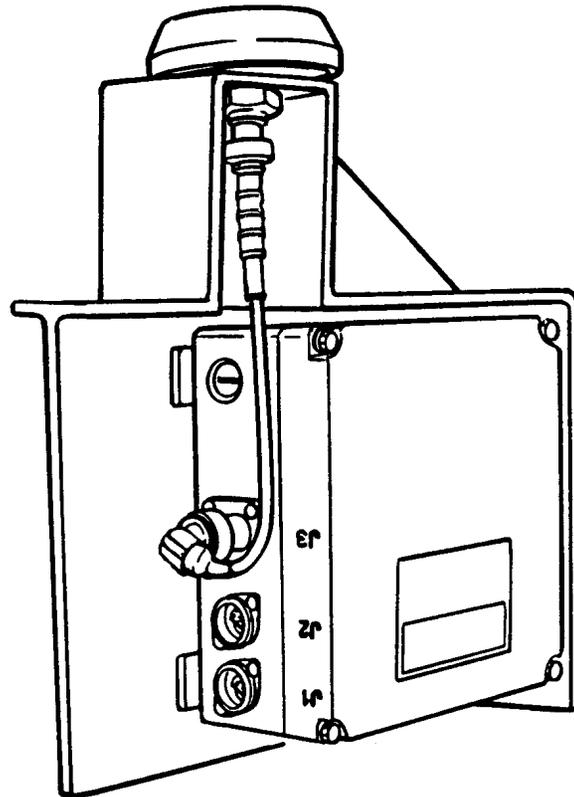
# TAMPER INDICATIONS

- **Disconnection of RDUs**
- **Disconnection of HDDUs**
- **Disconnection of power**
- **Control panel alterations**
- **Disconnection of system cables (BIT errors)**
- **Removal of TDRS memory card**

# TARGET SYSTEM TEMPLATE



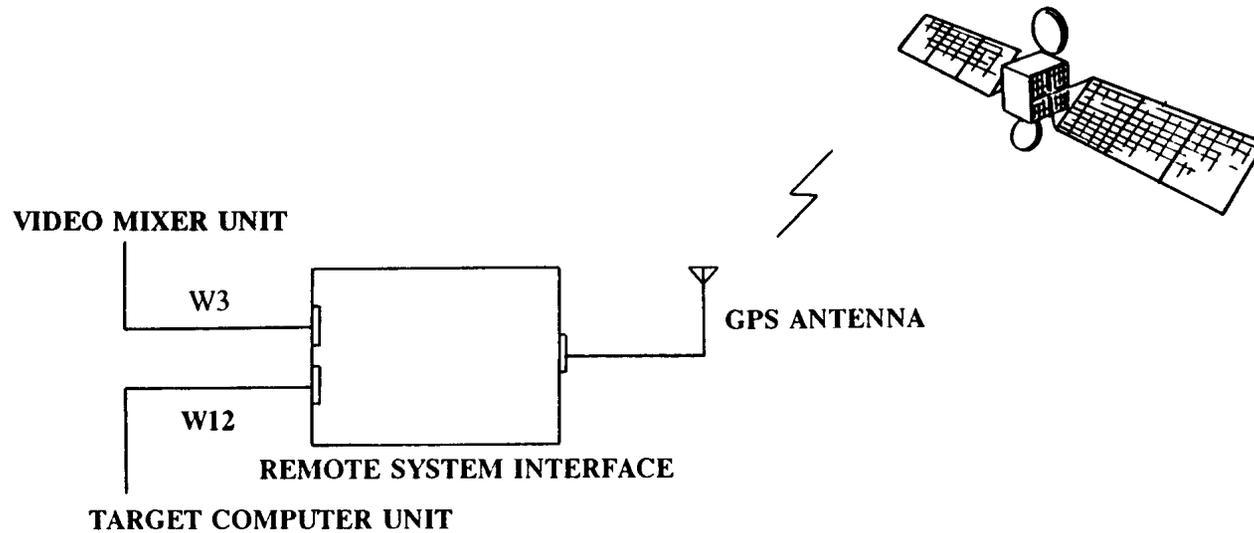
# REMOTE SYSTEM INTERFACE COMPONENTS



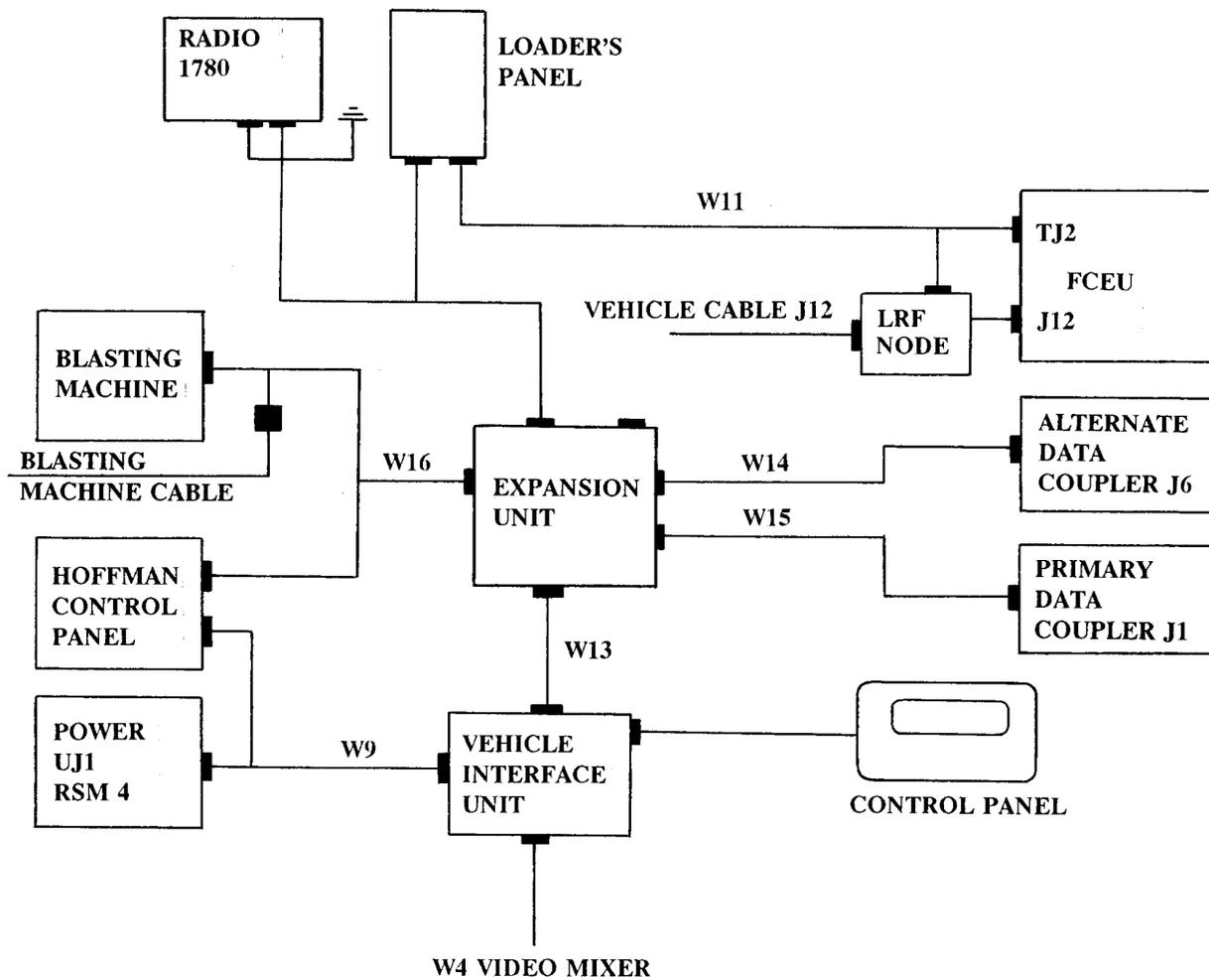
# **REMOTE SYSTEM INTERFACE MAIN FUNCTIONS**

- **Determine position**
- **Provide system clock**

# SYSTEM DESIGN REMOTE SYSTEM INTERFACE



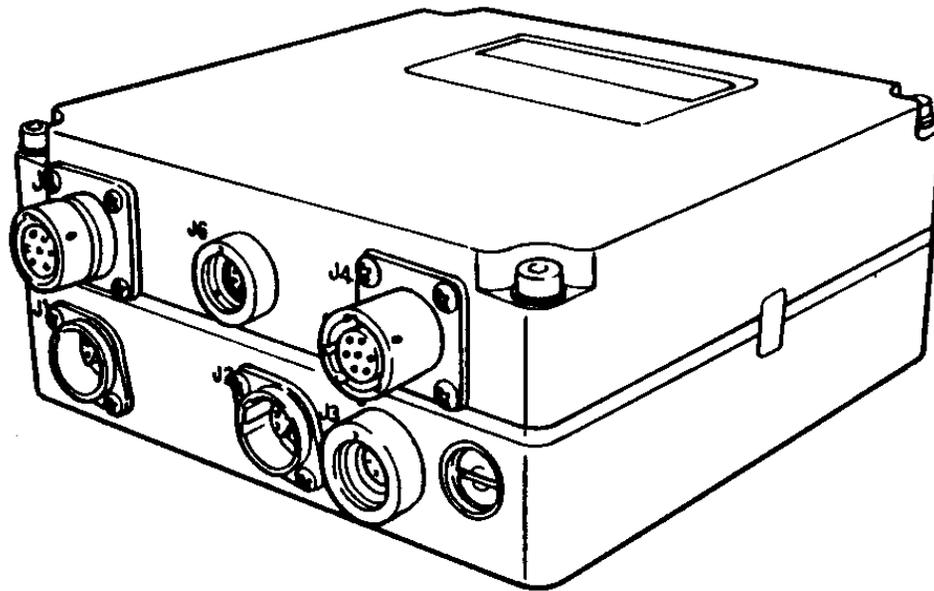
# VEHICLE INTERFACE ASSEMBLY SYSTEM DESIGN



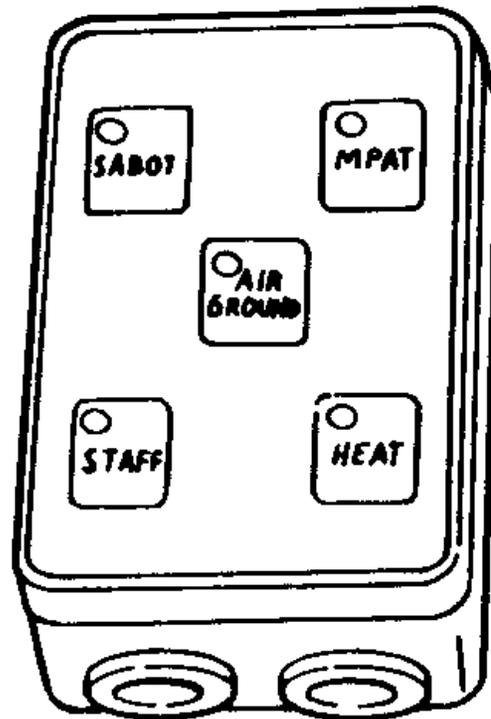
# **VEHICLE INTERFACE MAIN FUNCTIONS**

- **Receive and distribute power**
- **Monitor/inject signals into FCS**
- **Monitor weapon system status for AAR**
- **Register turret/hull relationship**
- **Inject sound into tank intercom**
- **Distribute vehicle status to TWGSS components**

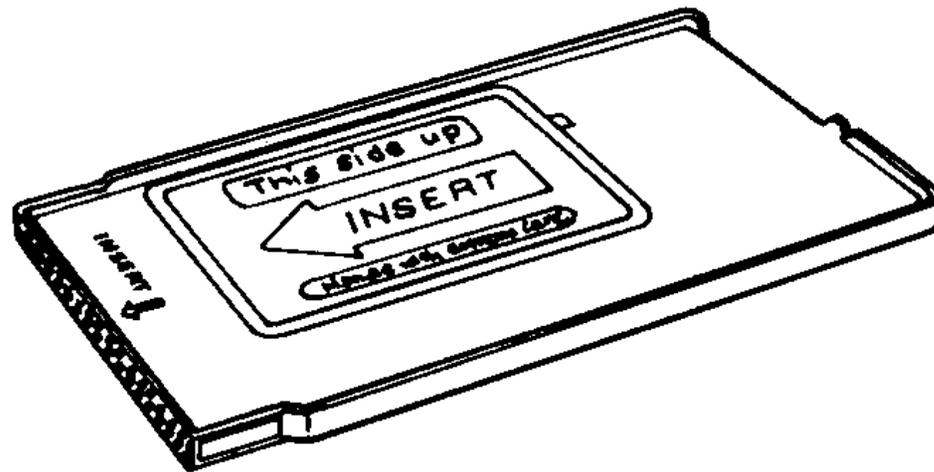
# VEHICLE INTERFACE UNIT



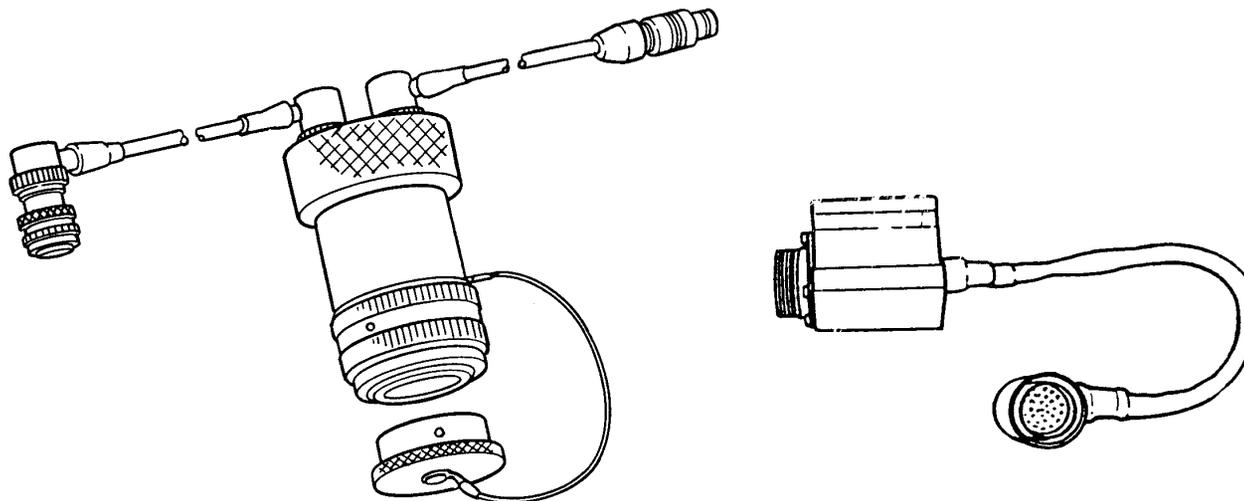
# VEHICLE INTERFACE UNIT (Cont.)



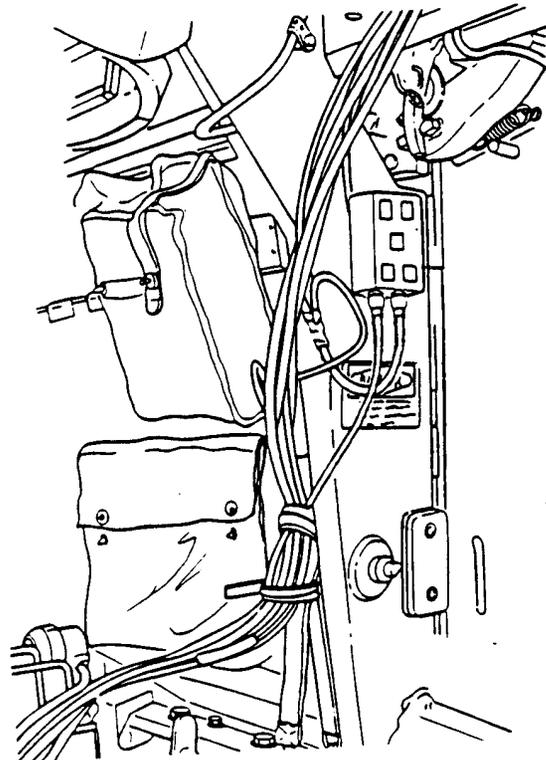
# EXPANSION UNIT



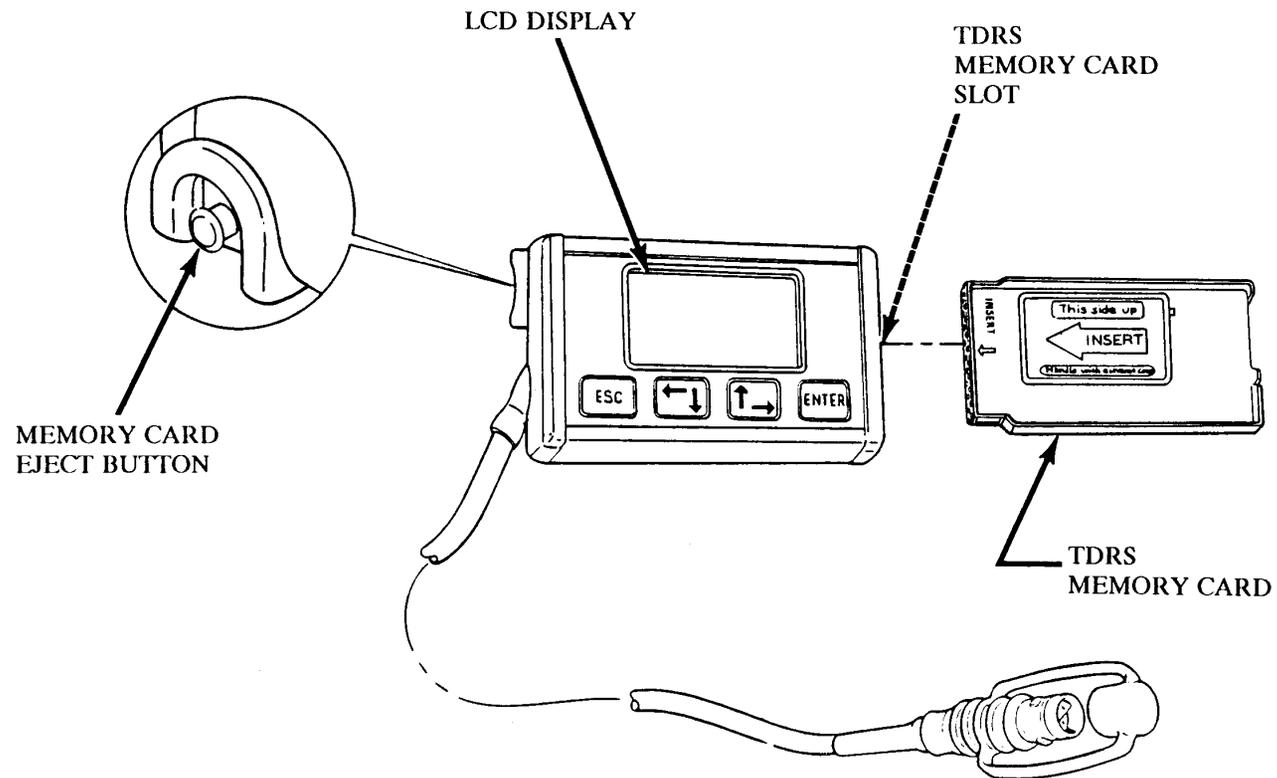
# W11 CABLE AND LRF NODE ASSEMBLY



# INSTALLATION OF VEHICLE INTERFACE



# OPERATOR INTERFACE



# **CONTROL PANEL MAIN FUNCTIONS**

- **Crew/instructor interface**
- **Setup of system**
- **Defines training parameters**
- **Stores training events**

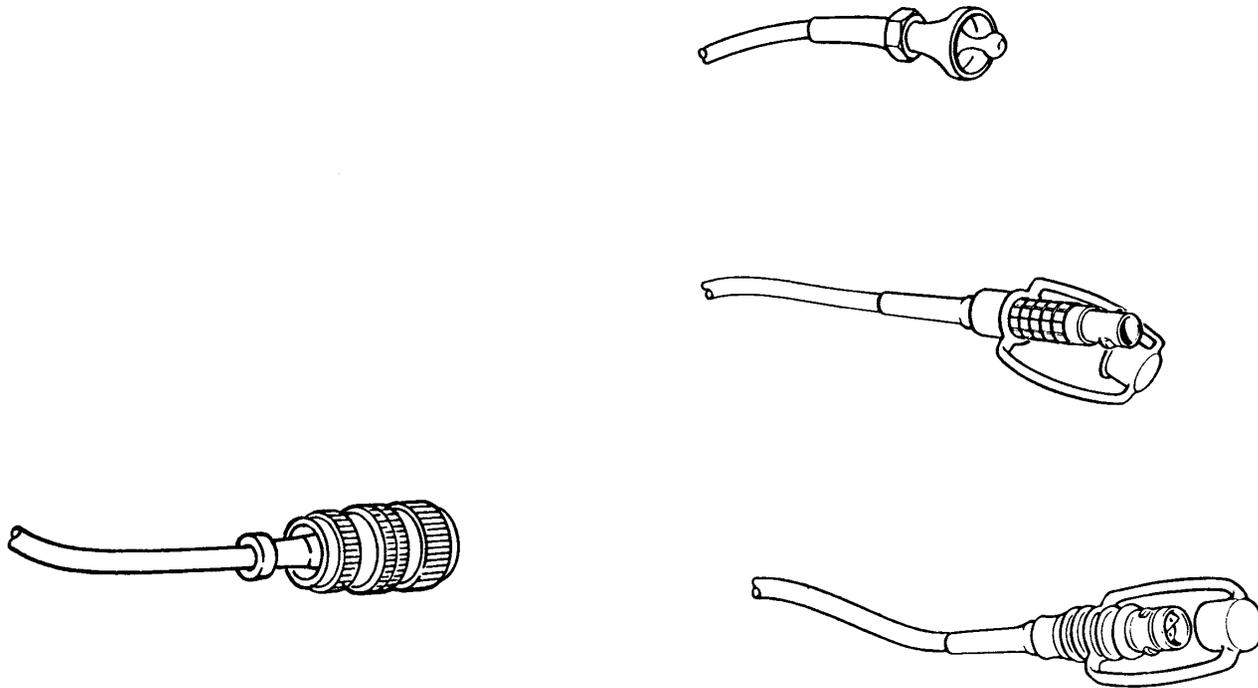
# **CONTROL PANEL CREW FUNCTIONS**

- **Built-in test (BIT)**
- **Alignment**
- **Upload of ammunition**
- **Presentation of training results**

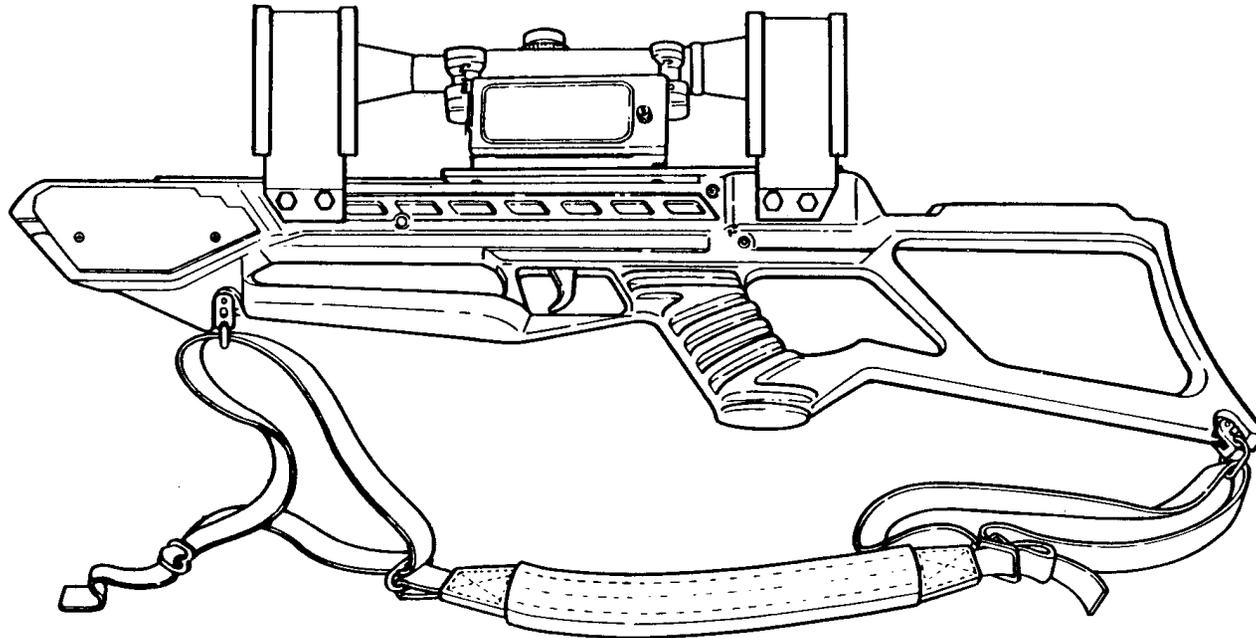
# **CONTROL PANEL INSTRUCTOR FUNCTIONS**

- **Manually adjust system clock**
- **Add ammunition to ready rack**
- **Add ammunition to hull semi-ready rack**
- **View position**

# SYSTEM CABLES



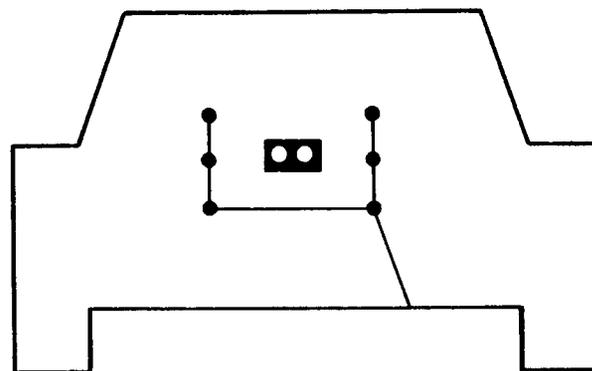
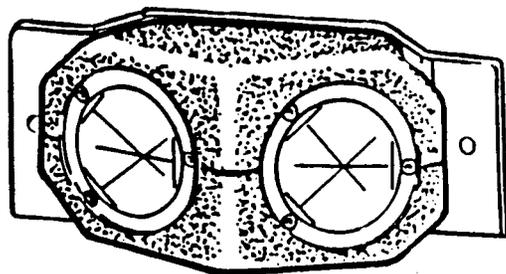
# CONTROL GUN (CGUN)



# **CGUN MESSAGES**

- **KILL**
- **RESET**
- **TEST**
- **TIME MARK**
- **ENABLE CONTROL**

# RETRO REFLECTOR UNIT



# **SUMMARY**

- **TWGSS components and their function**
- **CGUN**

## **CLOSING STATEMENT**

- **This block of instruction has provided the instructor an in depth knowledge of TWGSS. The knowledge gained in this lesson will be of use when training soldiers in your unit.**